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## **Agroecological principles and their impact in sustainable livestock production:**

**El Hatico Nature Reserve, El Cerrito, Valle del Cauca, Colombia.**

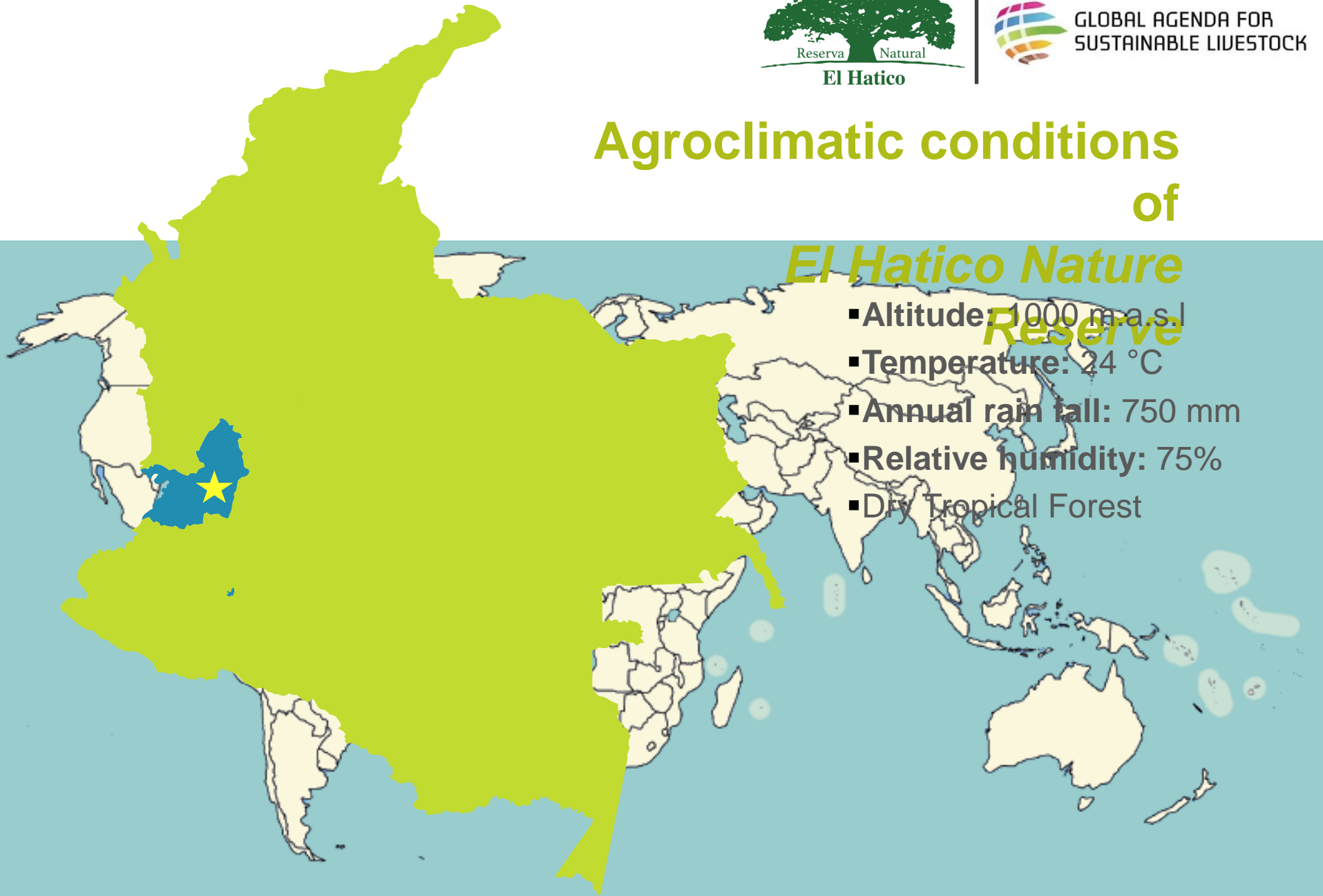


**GLOBAL AGENDA FOR  
SUSTAINABLE LIVESTOCK**

# Agroclimatic conditions of

## *El Hatico Nature Reserve*

- Altitude: 1000 m a.s.l
- Temperature: 24 °C
- Annual rain fall: 750 mm
- Relative humidity: 75%
- Dry Tropical Forest

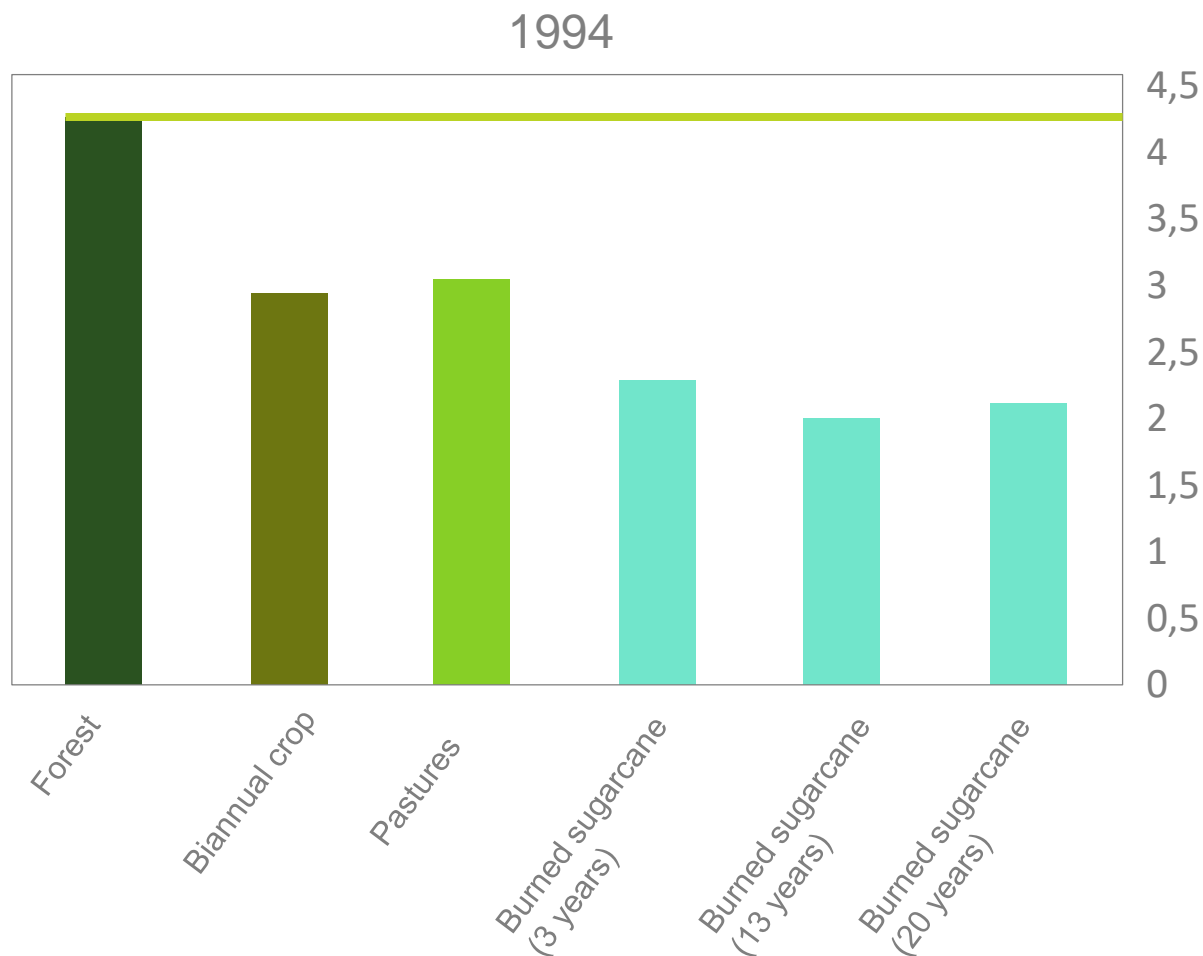




El Hatico  
Nature Reserve  
1986



# % Soil organic matter content El Hatico Nature Reserve



THE NEED FOR A  
CHANGE

1 Agriculture, livestock, and forestry integration.



2 Increasing plant biomass and diversity.



3 Protecting water sources and using them rationally.



4 Curbing soil degradation and promoting its recovery.



5 Increase productivity per area.



6 Protect regional biodiversity and make a sustainable use of it.



7 Promote employment opportunities for the community.



8 Ensure quality and healthy products for human consumption.



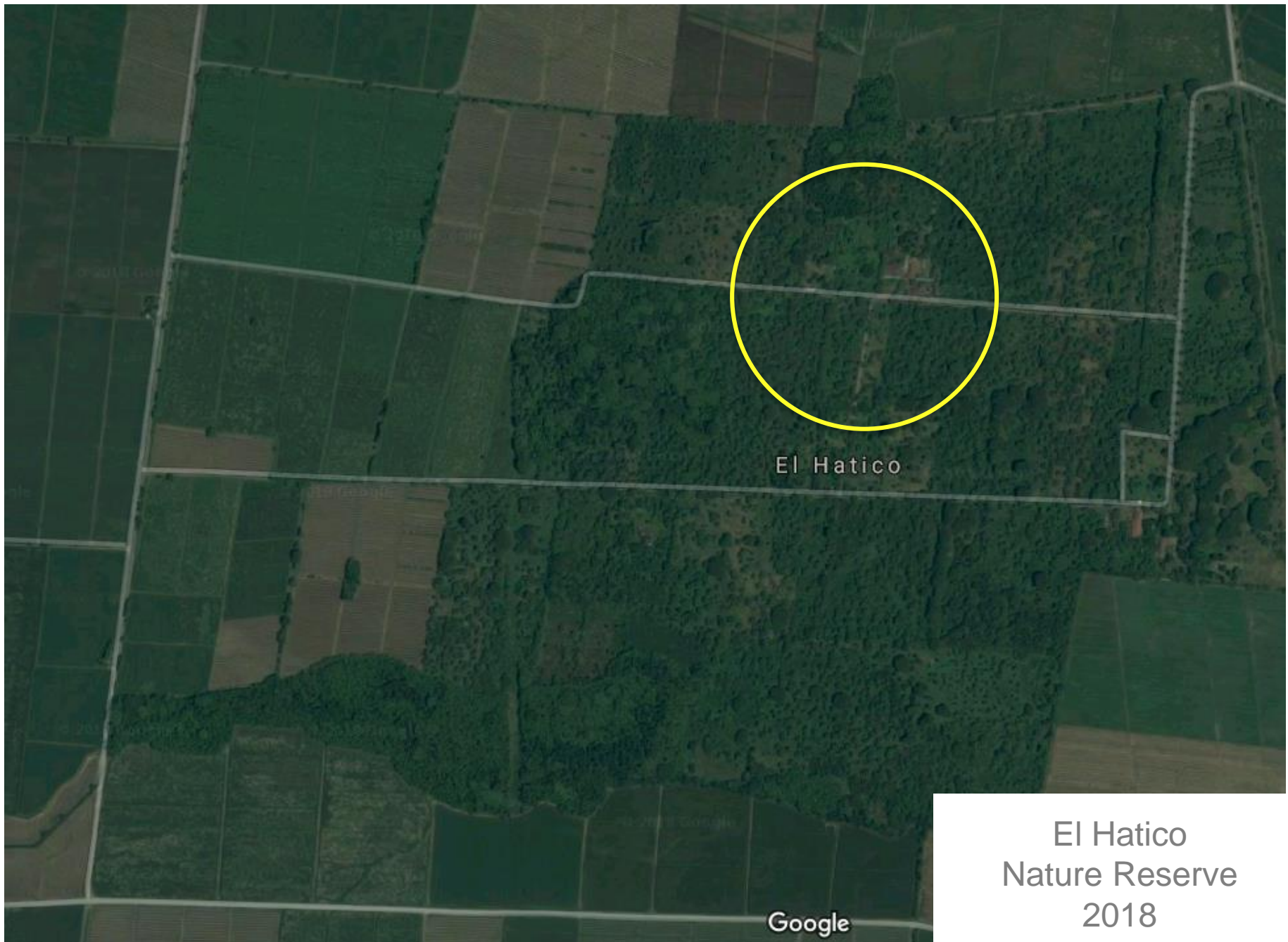
9 Ensure economic stability of the production system.



10 Promote low impact systems for the environment.



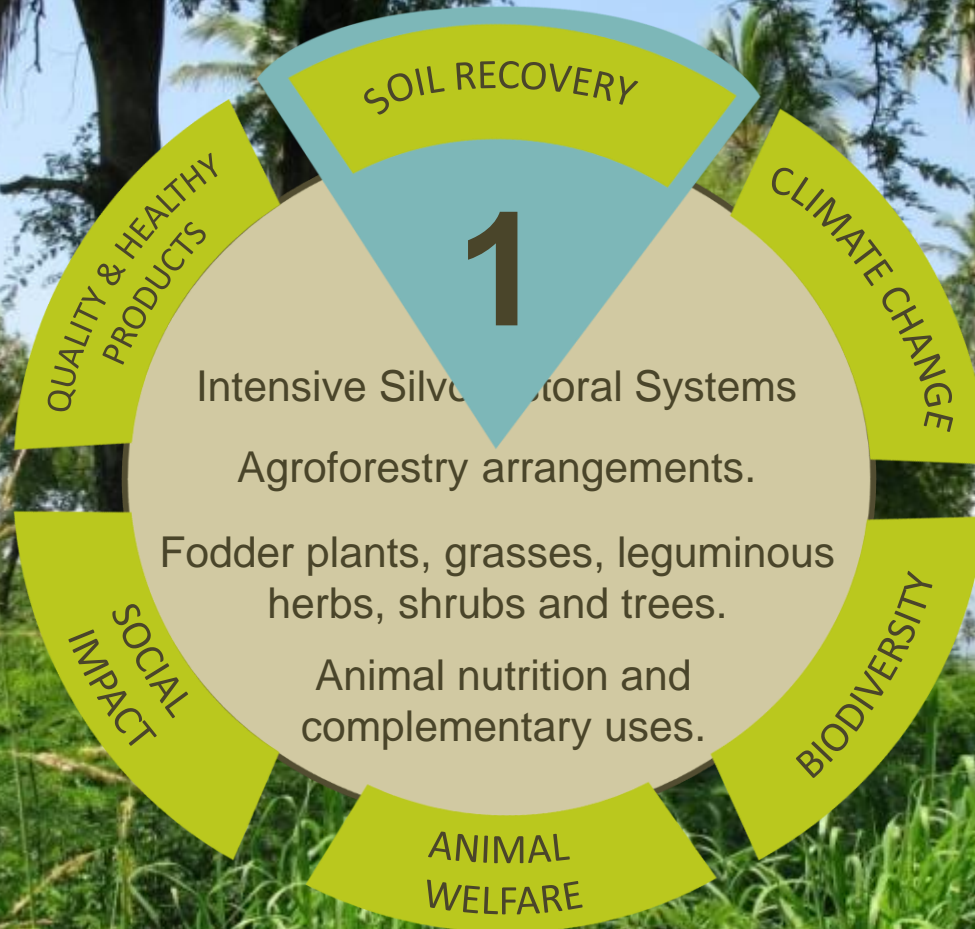
# AGROECOLOGICAL PRINCIPLES



El Hatico  
Nature Reserve  
2018

# IMPACT OF INTENSIVE SILVOPASTORAL SYSTEMS ISPS

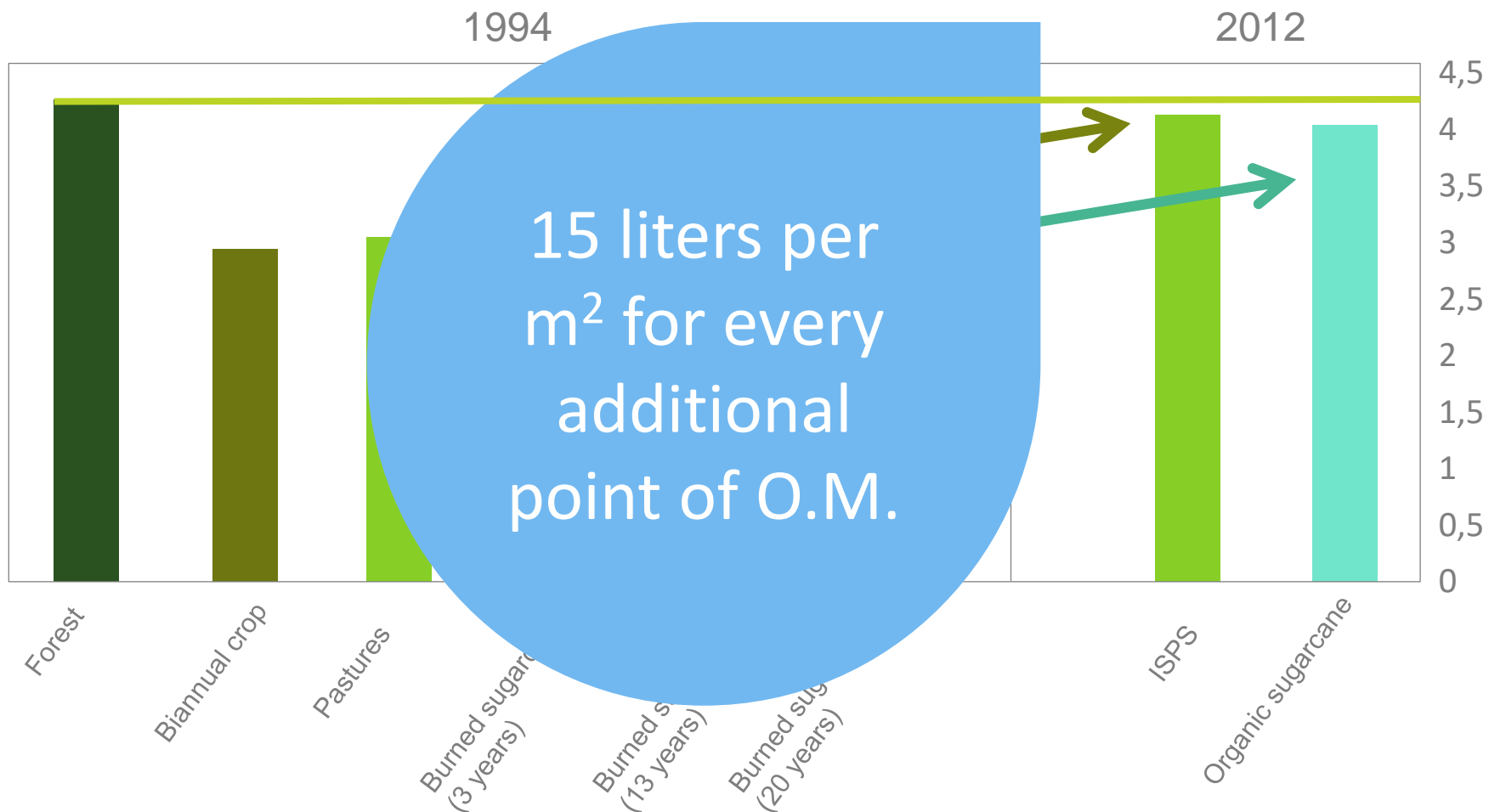




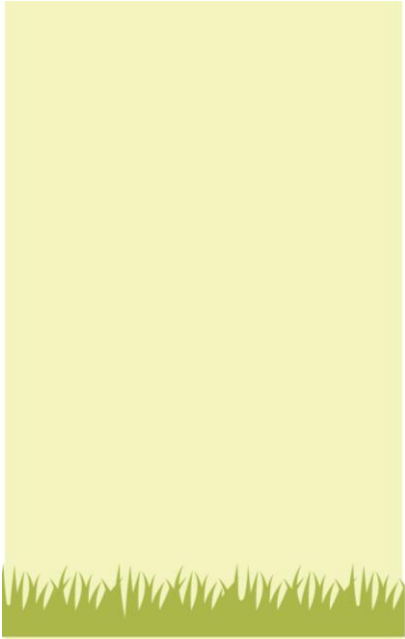

# % Soil organic matter content El Hatico Nature Reserve



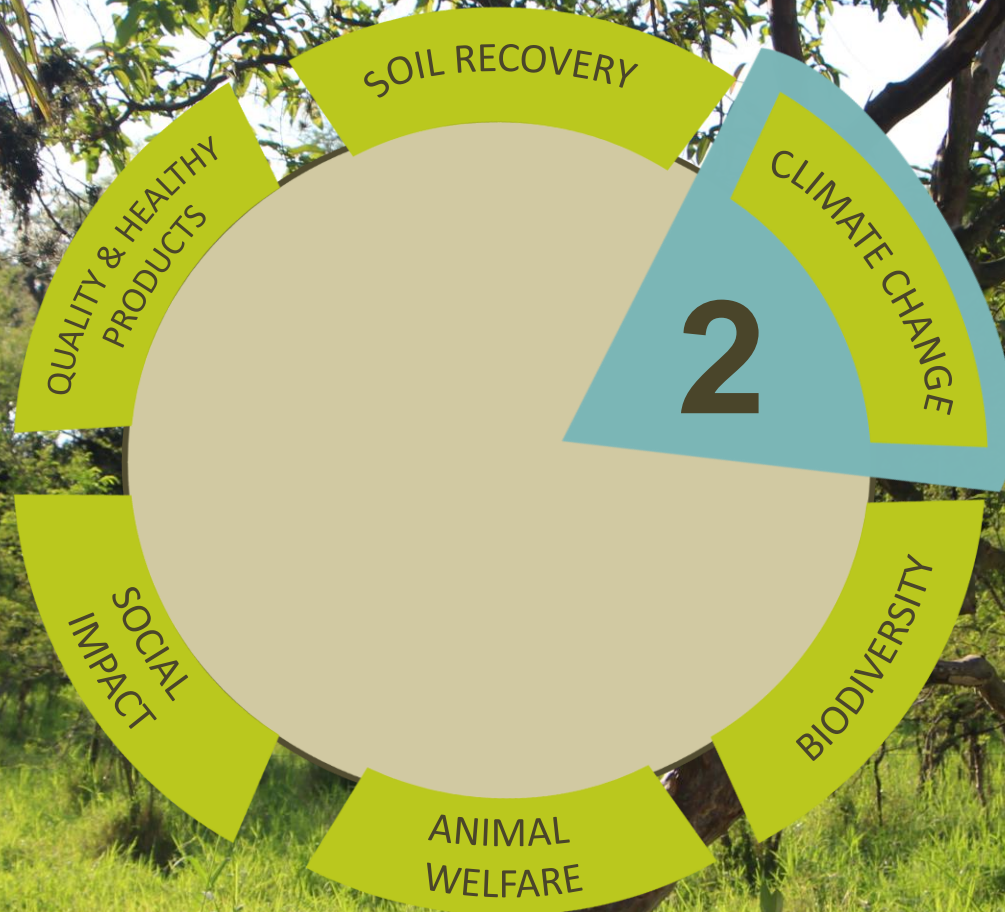
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## Accumulate water in the soil with its organic matter (%)

		
	Outside of the tree canopy	Under the tree canopy
<5 years	3,7	4,9
5 to 10 years	3,4	4,6
>10 years	3,6	4,4
Grass/ no trees	2,9	
Forest		4,3





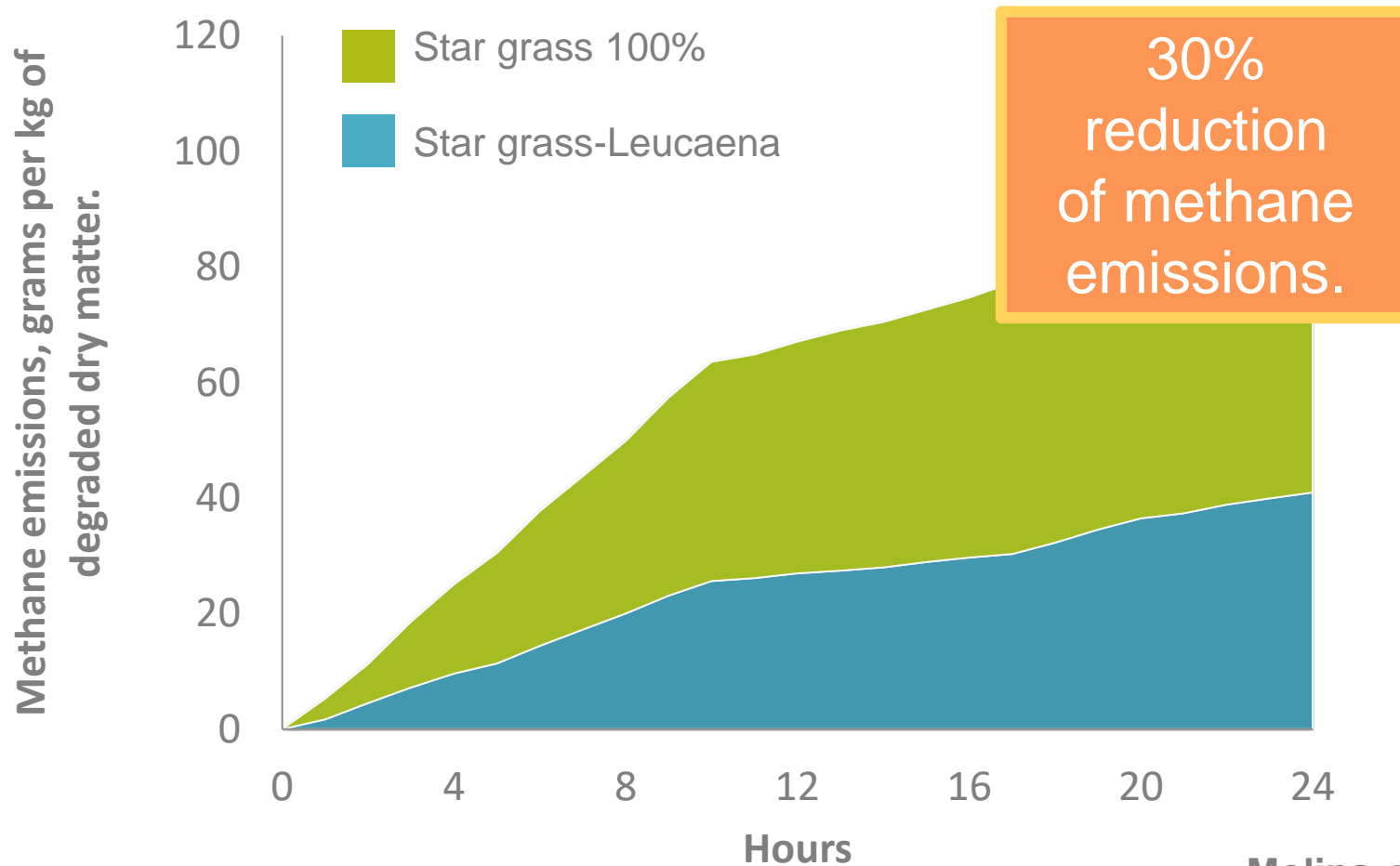


# Enteric fermentation

## Leucaena and methane – *Lucerna heifers*

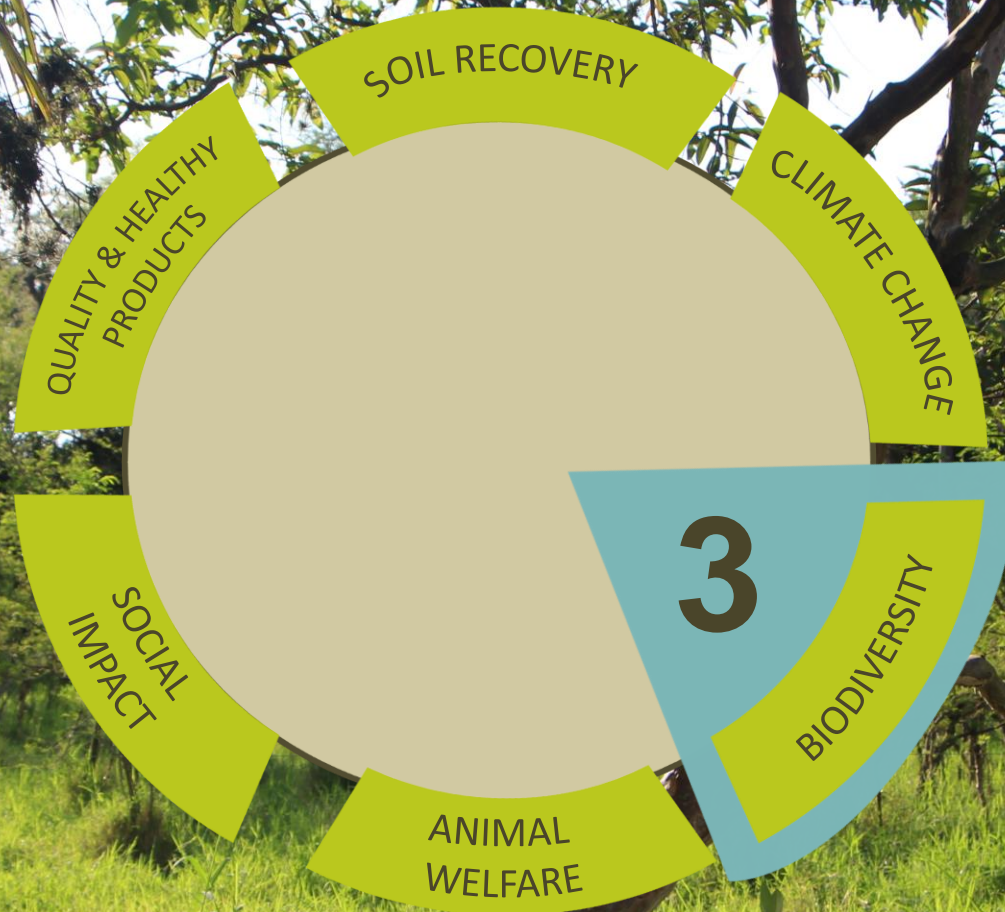


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Molina *et al.*, 2015b







# Improve the infiltration of rainfall in the soil

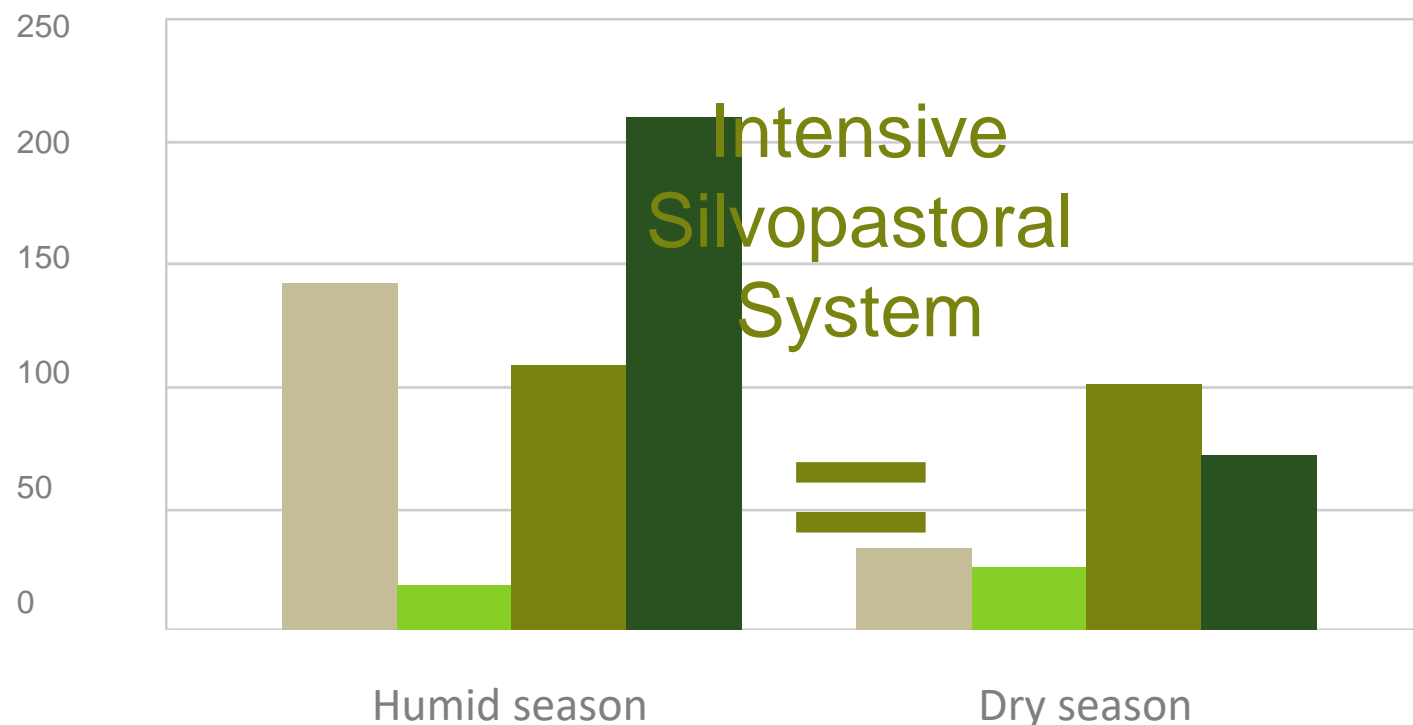


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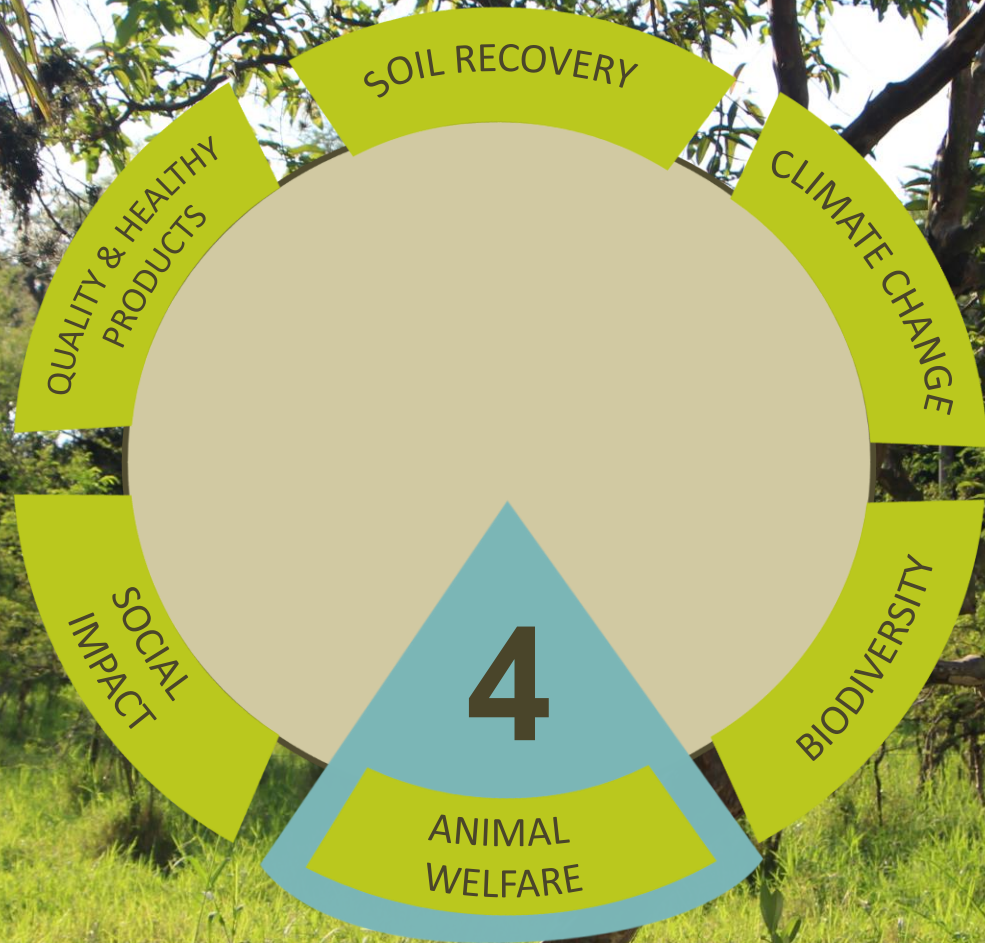
## Worm density per (0.75m<sup>3</sup>) in four soil uses

*El Hatico Nature Reserve*

- Organic sugarcane
- Conventional sugarcane
- Intensive Silvopastoral System
- Forest





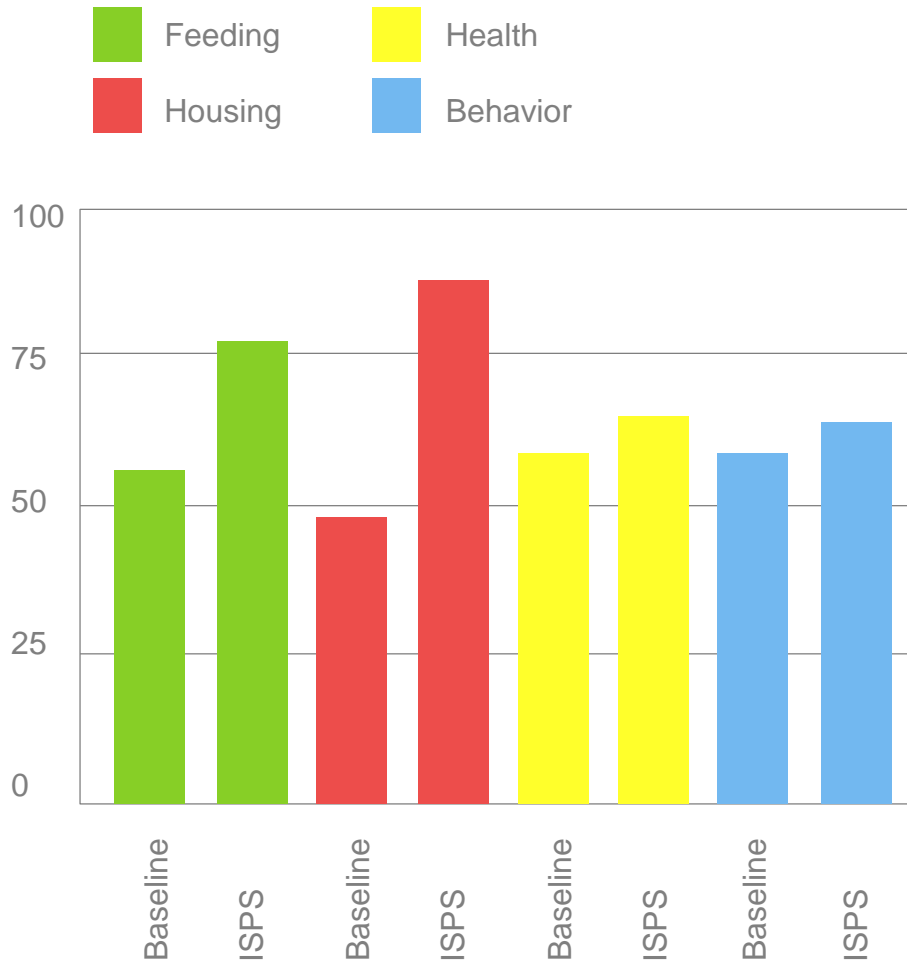




# Animal Welfare



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## Feeding:

- Feed
- Water
- Body condition

## Housing:

- Pasture
- Shade, lack of heat stress
- Resting comfort

## Health:

- No clinical signs
- No lameness

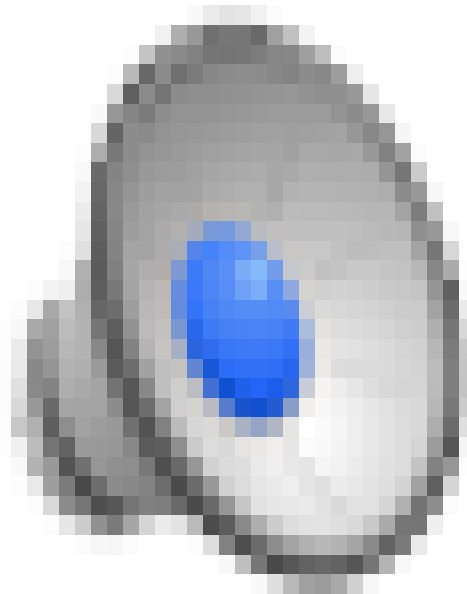
## Behavior:

- Diverse positive behavior
- No aggression
- No signs of fear

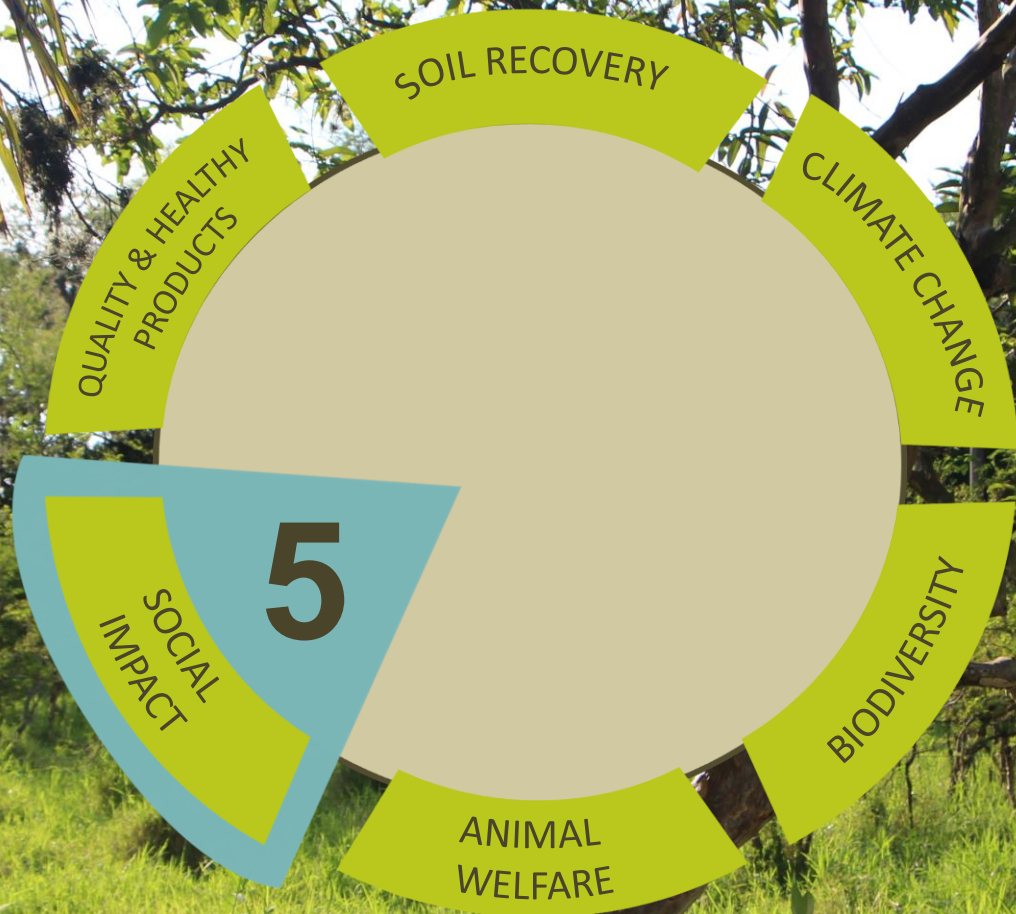
# Animal Welfare



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## Quality employment opportunities



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# Herederos Silvopastoriles



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A group that motivate young people in Colombia to continue working in the farms, and share knowledge and appropriate tools to develop sustainable productive projects





# Colombian Sustainable Livestock



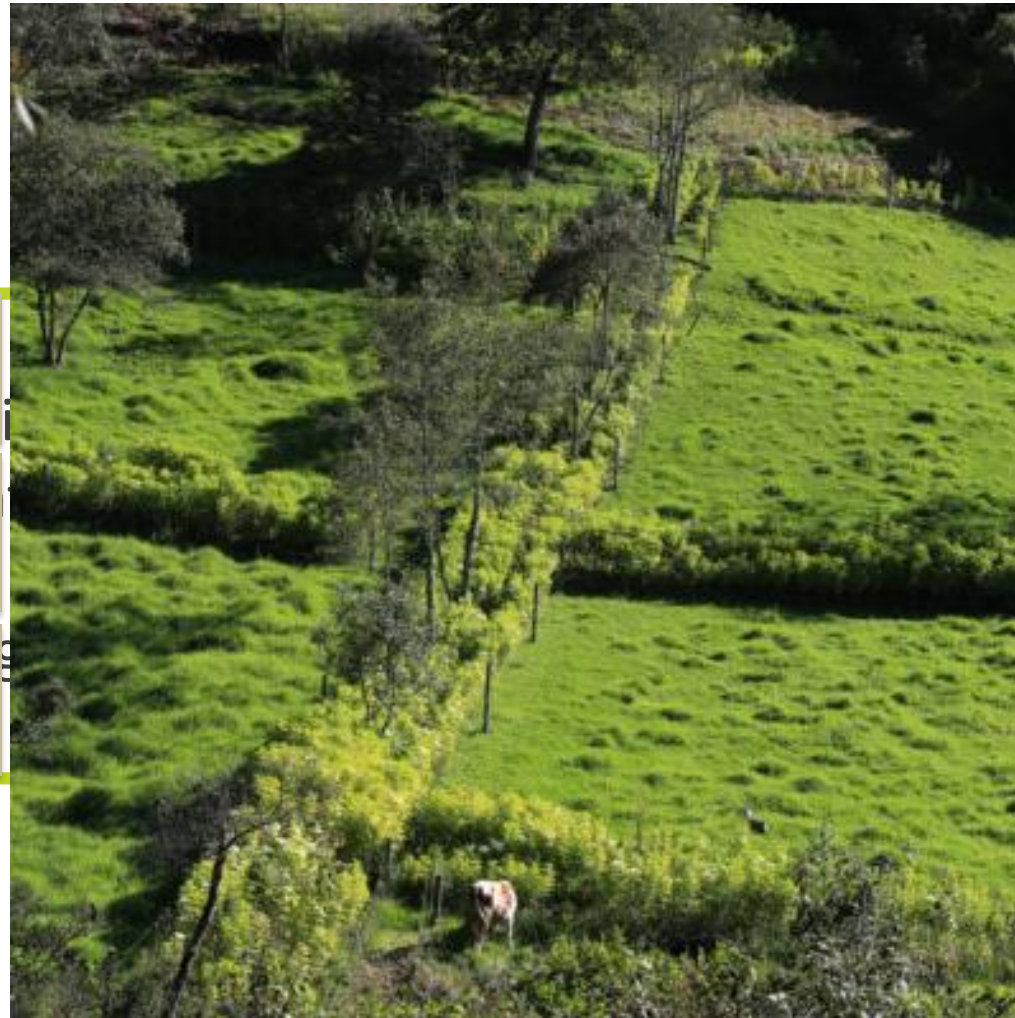
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**35.500 ha in sustainable livestock.**

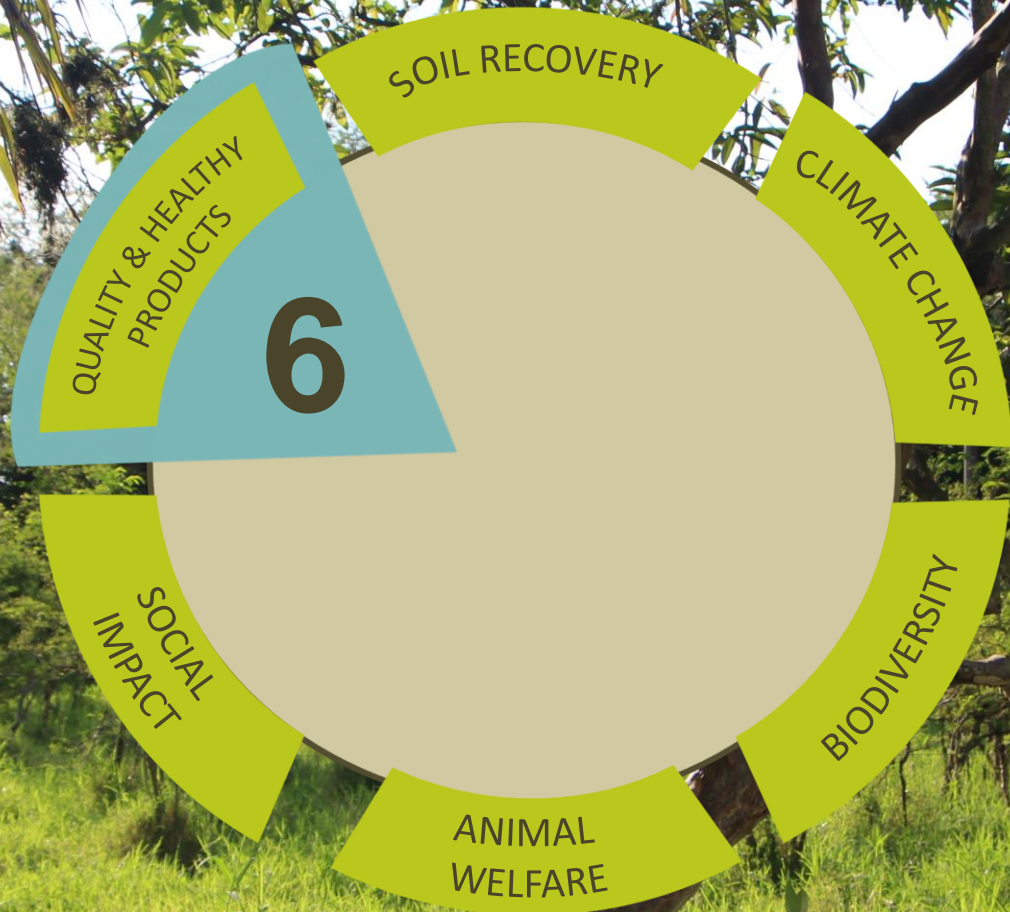
**-31.000** ha spread trees and live fences.  
**-4.500** ha in ISPS.

**15.000** ha of preserved forests.

- Medium farmers
- Large farmers











ORGANIC PRODUCTS NOT  
AS A GOAL, BUT AS A  
CONSEQUENCE.



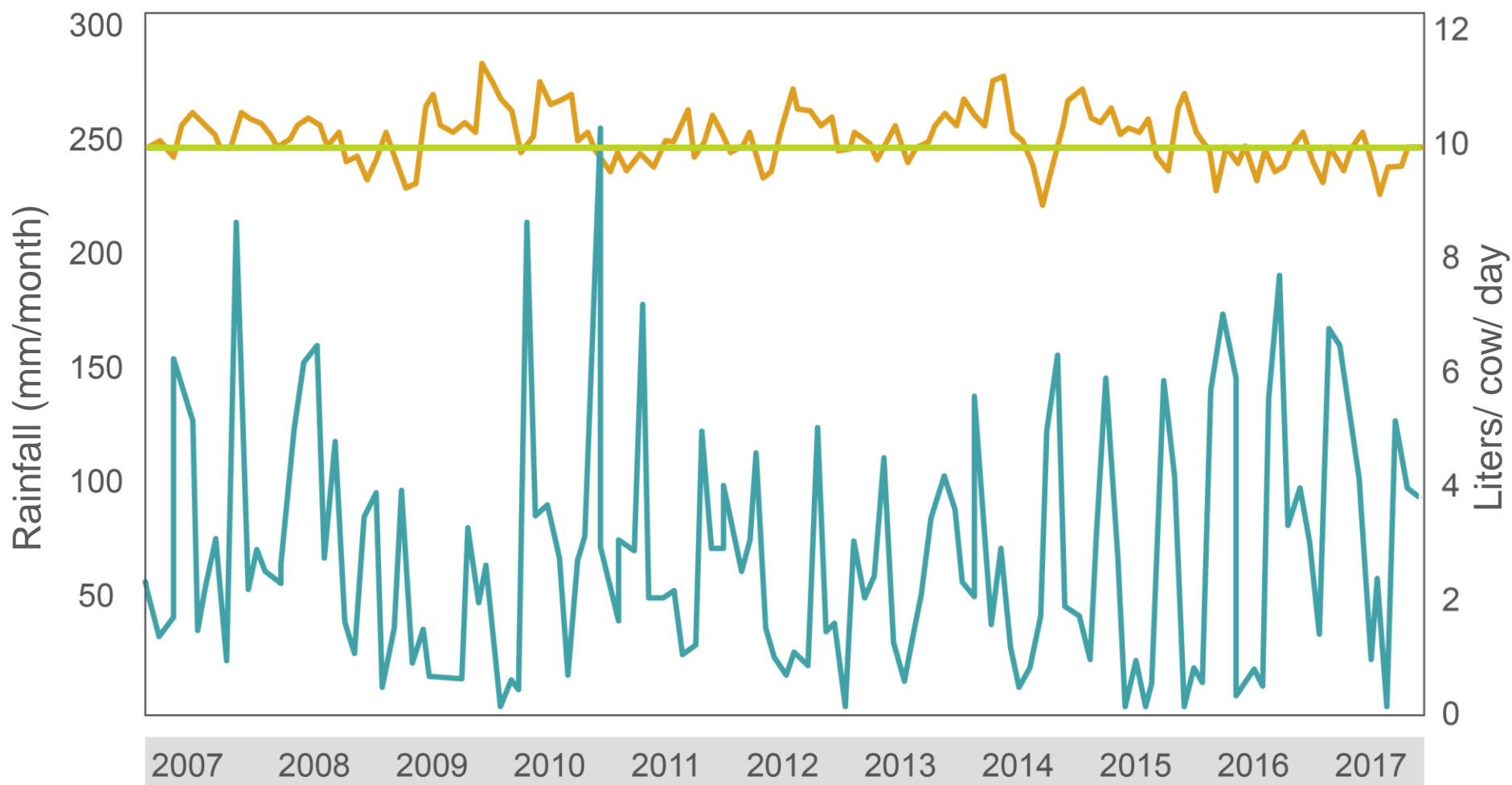




# Climate change resilience *El Hatico Nature Reserve* (2007-2017)



● Rainfall ● Liters milk cow/day









# What would happen without the transition to ISPS?



	Monoculture	ISPS
Area	111	69
Number of milking cows	220	220
Milk production l/ha/year	7.500	14.995
Total milk production l/year	667.500	809.706
Area	111	69
	USD	USD
Total milk production l/year	667.500	809.706
Price of 1l of milk	0,35	0,47
Indirect/ Administrative costs	32.370	32.370
Supplementation	55.194	55.194
Mineralized salt	6.127	3.574
Mineralized salt	0.127	3.574
Fertilizers	25.530	
Irrigation	32.647	
Fertilizers	25.530	
Utility/ha/ month	-27	206
Irrigation	32.647	
Total costs	271.281	210.551
Milk Income	235.588	381.038
Utility	-35.693	170.487
Utility/ month	-2.974	14.207
Utility/ha/ month	-27	206

TRM: 3400 COP/USD



# SUSTAINABLE DEVELOPMENT GOALS

17 GOALS TO TRANSFORM OUR WORLD

1 NO POVERTY



2 ZERO HUNGER



3 GOOD HEALTH AND WELL-BEING



8 DECENT WORK AND ECONOMIC GROWTH



12 RESPONSIBLE CONSUMPTION AND PRODUCTION



13 CLIMATE ACTION



15 LIFE ON LAND



17 PARTNERSHIPS FOR THE GOALS



SUSTAINABLE DEVELOPMENT GOALS

# THANK YOU



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